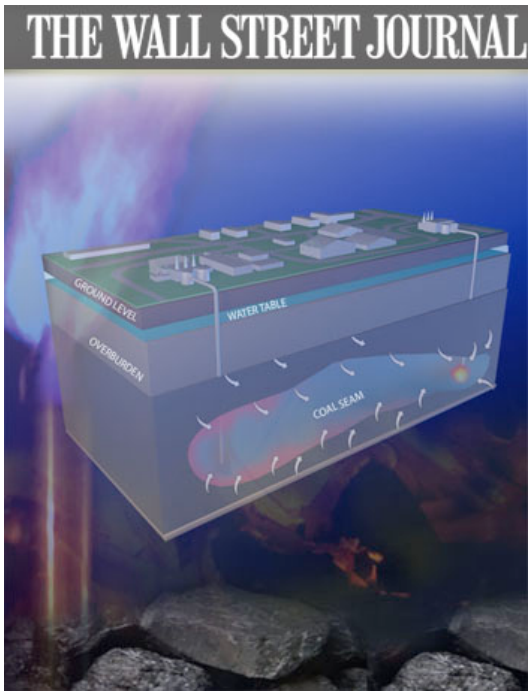
LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: Sept. 15-22, 2008.

WSJ looks at the Lab's efforts in coal gasification



By pumping (or injecting) air into an unmined seam and igniting the coal, coal is converted into product gas (syngas) that can be used for different forms of energy. The syngas is delivered to a site where it is converted to natural gas, electricity, liquid fuels (diesel and jet fuel) or ammonia-based fertilizers.

In an article featured Sept. 15 in *The Wall Street Journal,* reporter David Winning digs into underground coal gasification -- a way to tap energy from coal that is impossible or too costly to bring to the surface. The upside of the technology is that the carbon dioxide created during the process can be permanently stored underground.

Julio Friedmann, leader of LLNL's carbon-management program, is an expert in underground coal gasification and discusses the benefits of the technology. Friedmann says the risks of the clean-coal technology are avoidable if a good site and good management is in place.

To read the entire article, go to
http://online.wsj.com/article/SB122123943690128651.html

Lab's Forensic Science Center featured in the news

A four-page article about the Forensic Science Center (FSC) and other labs at LLNL involved in forensics entitled "Finding Weapons," was published recently in *Chemical & Engineering News*.

The FSC at LLNL is one of 16 labs worldwide, and only one of two in the United States, currently certified by the Organization for the Prohibition of Chemical Weapons (OPCW) to analyze chemical weapons samples.

The FSC is the only lab in the United States that can handle forensic samples relating to the full range of weapons of mass destruction threats including chemical, biological, radiological, nuclear and explosive

Peeking inside molecules

The diffraction chamber at the Advanced Light Source, Beamline 9.0.1 at Lawrence Berkeley National Laboratory.

It's not easy to see a single molecule inside a living cell.

Nevertheless, researchers at LLNL are helping to develop a new technique that will enable them to create detailed high-resolution images, giving scientists an unprecedented look at the atomic structure of cellular molecules.

The LLNL team is collaborating with scientists across the country and in Germany and Sweden to utilize high-energy X-ray beams, combined with complex algorithms, to overcome difficulties in current technology.

The work was recently featured in *Medical News Today.* See the article at http://www.medicalnewstoday.com/articles/121802.php

CNN looks at labs' work in aircraft "survivability"

In a segment shown on Sept. 12, CNN reported on a project that has been under way at the three NNSA laboratories -- Livermore, Los Alamos and Sandia -- for about a year. Project Newton involves "using computer modeling to study aircraft survivability" under scenarios involving explosives. Officials have found the labs' work of sufficient merit to justify making public aspects of the overall effort.

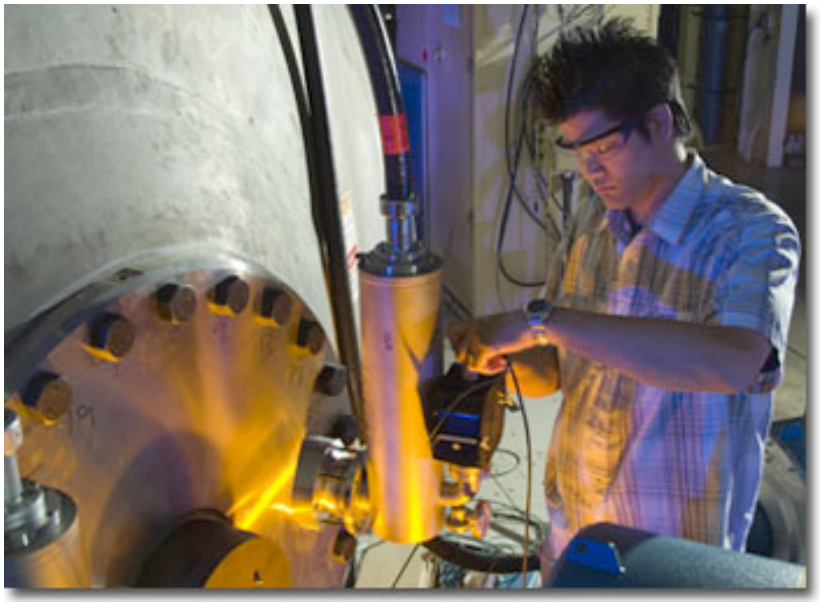
LLNL's role has focused upon blast modeling and threat evaluation. The NEXESS (National Explosives Engineering Sciences Security Center) team, headed by John Reynolds of the Chemical Science Division, is leading the LLNL effort while the overall effort is managed from Sandia.

The segment can be viewed at http://www.cnn.com/video/#/video/bestoftv/2008/09/12/meserve.bombs.bursting.in.air.cnn?iref=videosearch

Latest editon of weekly *Newsline* available

Newsline provides the latest lab research and operations news.
See the latest issue at https://newsline.llnl.gov/_rev02/index.php

Photo of the week



Feel the HEAF -- Bradley Wong makes preparations for a test at the Laboratory's High Explosives Application Facility, or HEAF. HEAF has been designated as a National Nuclear Security Administration Center of Excellence for high explosives research and development. Experiments at HEAF help ensure the safety of the nuclear weapons stockpile.

LLNL is managed by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy's National Nuclear Security Administration.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail mailto:labreport@llnl.gov.

The Livermore Lab Report archive is available at: https://publicaffairs.llnl.gov/news/lab_report/2008index.html